

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicants:	Kay-Yut Chen	§	Art Unit:	3623
		§		
Serial No.:	09/944,969	§	Confirmation No.:	2217
		§		
Filed:	August 30, 2001	§	Examiner:	David Robertson
		§		
For:	Method and Apparatus for	§	Atty. Dkt. No.:	10004567-1
	Modeling Business Processes	§		(HPC.0328US)

Mail Stop Appeal Brief-Patents

Commissioner for Patents

P.O. Box 1450

Alexandria, VA 22313-1450

APPEAL BRIEF PURSUANT TO 37 C.F.R § 41.37

Sir:

The final rejection of claims 1-23 is hereby appealed.

I. REAL PARTY IN INTEREST

The real party in interest is the Hewlett-Packard Development Company, LP. The Hewlett-Packard Development Company, LP, a limited partnership established under the laws of the State of Texas and having a principal place of business at 11445 Compaq Center Drive West, Houston, TX 77707, U.S.A. (hereinafter "HPDC"). HPDC is a Texas limited partnership and is a wholly-owned affiliate of Hewlett-Packard Company, a Delaware Corporation, headquartered in Palo Alto, CA. The general or managing partner of HPDC is HPQ Holdings, LLC.

II. RELATED APPEALS AND INTERFERENCES

None.

III. STATUS OF THE CLAIMS

Claims 1-23 have been finally rejected and are the subject of this appeal.

IV. STATUS OF AMENDMENTS

An Amendment Under 37 C.F.R. § 1.116 was filed April 6, 2009. Claims 1 and 18 were amended to address the § 101 rejection. The Examiner indicated in the Advisory Action mailed April 14, 2009, that the Amendment has overcome the § 101 rejection and will be entered for purposes of appeal.

V. SUMMARY OF THE CLAIMED SUBJECT MATTER

The following provides a concise explanation of the subject matter defined in each of the independent claims involved in the appeal, referring to the specification by page and line number and to the drawings by reference characters, as required by 37 C.F.R. § 41.37(c)(1)(v). Each element of the claims is identified by a corresponding reference to the specification and drawings where applicable. Note that the citation to passages in the specification and drawings for each claim element does not imply that the limitations from the specification and drawings should be read into the corresponding claim element.

Independent claim 1 recites a computer-implemented method of determining an economic impact of business policies, comprising the computer executing the steps of:

- a) providing player definitions defining a plurality of players and an associated set of rules defining a possible decision space, a decision-making process tree, an information set, an outcome function, and a payoff function for each player (Spec., p. 6, ln. 10-12; p. 7, ln. 3 – p. 8, ln. 17);
- b) translating (Fig. 3:340) the player definitions into at least one codified script (Spec., p. 9, ln. 7-12; p. 16, ln. 22 – p. 17, ln. 2); and
- c) executing (Fig. 3:350) the at least one codified script, wherein a result of the outcome and payoff functions at the end of execution of a script stage determines the economic impact of the business policies defined by the rules (Spec., p. 17, ln. 3-10).

Independent claim 10 recites an apparatus for determining an economic impact of business policies, comprising:

- a) a business process definition module (Fig. 1:120) for providing player definitions defining a plurality of players and an associated set of rules defining a possible decision space, a decision-making process tree, an information set, an outcome function, and a payoff function for each player (Spec., p. 6, ln. 3 – p. 8, ln. 17);
- b) a script translator module (Fig. 1:140) for translating the player definitions into codified scripts, wherein the codified scripts define at least one simulation stage (Spec., p. 9, ln. 7-12); and
- c) a simulation module (Fig. 1:150) for executing the codified scripts, wherein a result of the outcome and payoff functions at the end of execution of the at least one simulation stage determines the economic impact of the business policies (Spec., p. 11, ln. 5-11; p. 17, ln. 3-10).

Independent claim 18 recites a computer-implemented method of predicting a behavioral outcome resulting from a business rule, comprising the computer executing the steps of:

- a) defining at least one player, business rules, and an environment that defines actions that the player can take in accordance with the business rules (Spec., p. 6, ln. 10-12; p. 7, ln. 3 – p. 8, ln. 17);
- b) translating (Fig. 3:340) the definitions into a codified script (Spec., p. 9, ln. 7-12; p. 16, ln. 22 – p. 17, ln. 2); and
- c) determining a behavioral outcome resulting from player-selected actions during execution (Fig. 3:350) of the codified script (Spec., p. 17, ln. 3-10).

VI. GROUNDS OF REJECTION TO BE REVIEWED ON APPEAL¹

- A. **Claims 1-23 were rejected under 35 U.S.C. § 103(a) as unpatentable over “Synthetic Economies: The Application of Distributed Interactive Computing Environments for Policy and Chaturvedi et al., “Synthetic Economies: The Application of Distributed Interactive Computing Environments for Policy and Management Decision Making,” Institute for Defense Analyses (Chaturvedi/IDA) with Mehta, “Simulations in Economics and Management,” Communication of the ACM (Chaturvedi/ACM), and further in view of U.S. Patent No. 6,405,173 (Honarvar), P.R. Sugges, “The Use of Computerized Business Games to Simulate Business Behavior Under Different Policies,” IEEE 1979 Winter Simulation Conference (Sugges),” and U. Fischbacher, “z-Tree – Zurich Toolbox for Readymade Economic Experiments – Experimenter’s Manual,” Institute for Empirical Research in Economics (Fischbacher).**

VII. ARGUMENT

The claims do not stand or fall together. Instead, Appellant presents separate arguments for various independent and dependent claims. Each of these arguments is separately argued below and presented with separate headings and sub-headings as required by 37 C.F.R. § 41.37(c)(1)(vii).

¹ As stated in the Advisory Action mailed April 14, 2009, the rejection under 35 U.S.C. § 101 has been withdrawn.

- A. **Claims 1-23 were rejected under 35 U.S.C. § 103(a) as unpatentable over “Synthetic Economies: The Application of Distributed Interactive Computing Environments for Policy and Chaturvedi et al., “Synthetic Economies: The Application of Distributed Interactive Computing Environments for Policy and Management Decision Making,” Institute for Defense Analyses (Chaturvedi/IDA) with Mehta, “Simulations in Economics and Management,” Communication of the ACM (Chaturvedi/ACM), and further in view of U.S. Patent No. 6,405,173 (Honarvar), P.R. Sugges, “The Use of Computerized Business Games to Simulate Business Behavior Under Different Policies,” IEEE 1979 Winter Simulation Conference (Sugges),” and U. Fischbacher, “z Tree – Zurich Toolbox for Readymade Economic Experiments – Experimenter’s Manual,” Institute for Empirical Research in Economics (Fischbacher).**

1. Claims 1-9.

It is respectfully submitted that the § 103 rejection over Chaturvedi/IDA, Chaturvedi/ACM, Honarvar, Sugges, and Fischbacher is defective.

To make a determination under 35 U.S.C. § 103, several basic factual inquiries must be performed, including determining the scope and content of the prior art, and ascertaining the differences between the prior art and the claims at issue. *Graham v. John Deere Co.*, 383 U.S. 1, 17, 148 U.S.P.Q. 459 (1965). Moreover, as the U.S. Supreme Court has held, it is important to identify a reason that would have prompted a person of ordinary skill in the art to combine reference teachings in the manner that the claimed invention does. *KSR International Co. v. Teleflex, Inc.*, 127 S. Ct. 1727, 1741, 82 U.S.P.Q.2d 1385 (2007).

Here, a comparison of the teachings of the references, even if hypothetically combined, will reveal that the references disclose subject matter that is significantly different from the subject matter of claim 1.

The primary references relied upon by the Examiner include Chaturvedi/IDA and Chaturvedi/ACM, which refer to Synthetic Economy for Analysis and Simulation (SEAS).² As noted by Chaturvedi/ACM, “SEAS replicates the real world in most crucial dimensions,” Chaturvedi/ACM, page 60. Chaturvedi/ACM states that “SEAS is a distributed, interactive, real-time environment for conducting large-scale experiments and simulations in areas where interactions among agents need to be studied.” *Id.* The passage of Chaturvedi/IDA referred to by the Examiner is Appendix A, which refers to a base synthetic economy developed at Purdue University that contains three sectors: industry producers, firms, and households. See 1/7/2009 Office Action at 6.

As correctly noted by the Examiner, Chaturvedi/ACM and Chaturvedi/IDA do not disclose translating player definitions that define a plurality of players and an associated set of rules defining a possible decision space, a decision-making process tree, an information set, an outcome function, and a payoff function for each player, into at least one codified script that is executed. It is apparent that SEAS as defined by Chaturvedi/ACM and Chaturvedi/IDA uses a **predefined program** (not scripts translated from player definitions) that is able to accept different inputs for performing the described simulations.

² The assertion in the Office Action dated January 7, 2009 that Mehta (U.S. Patent No. 6,931,365) is a “detailed ‘product description’ of the earlier disclosed SEAS” in Chaturvedi/IDA and Chaturvedi/ACM is clearly incorrect. The filing date of Mehta’s provisional application is December 2000, which is well after the dates of the Chaturvedi references. Thus, it is clear that the subject matter of Mehta constitutes **later** developed technology **not** present in SEAS of the earlier Chaturvedi reference.

However, a predefined program also appears to be exactly what the secondary references relied upon by the Examiner teach. The Examiner relied upon Sugges as disclosing “computerized business games used as a research tool to determine how businesses respond to corporate and government policies in the context of economies,” and refers to Fischbacher as disclosing “use of a scripting language in a customizable, interactive computerized business game.” 6/30/2008 Examiner at 3, 7-8. The assertion that Fischbacher teaches use of a scripting language in a customizable, interactive computerized business game is **incorrect**. Fischbacher describes a z-Tree program that is designed to enable conducting of economic experiments. Fischbacher, page 5. The z-Tree program includes a server program (z-Tree) and client programs (z-Leaf). The z-Tree server program and the z-Leaf client program of Fischbacher are clearly **predefined programs**, not scripts that can be translated from player definitions into at least one codified script, as recited in claim 1. In fact, the term “script” appears **nowhere** in Fischbacher.

Similarly, with respect to Sugges, there is absolutely no indication that its computerized business games include codified scripts translated from player definitions. Honarvar, the other reference cited by the Examiner, refers to a decision management system that simulates the effect of a strategy by applying the strategy to a client data, and tracks what type of client traveled through a respective decision point in the strategy during the simulation. Honarvar, Abstract. However, there is no indication that the decision management system of Honarvar is translated from player definitions into a script.

A reference cited by the Examiner that refers to “script” is Jepsen. However, Jepsen describes programming languages **in general**. Page 71 of Jepsen refers to scripting languages. However, nowhere in Jepsen is there any hint that the scripting language described in Jepsen can

be translated from player definitions that define a plurality of players and associated set of rules defining a possible decision space, a decision-making process tree, an information set, an outcome function, and a payoff function for each player.

The Examiner further argued that “the addition of old and well known scripting methods is precisely the purpose and application of the prior art, in which it is shown that scripting was old and well known to simulation including business and economic simulation.” 6/30/2008 Examiner at 3. However, as explained above, this assertion by the Examiner is erroneous. None of the cited references provide any hint of translating player definitions into at least one codified script that is executed, as recited in claim 1. In fact, all the references cited by the Examiner indicate that a **predefined program**, and not scripts translated from player definitions, is used. The only possible reference to scripting language is provided by Jepsen, which refers to scripting language in general. There is no hint given in Jepsen of the subject matter of claim 1, namely of translating player definitions into at least one codified script.

In view of the foregoing, it is clear that even if the references could be hypothetically combined, the hypothetical combination of the references would not have led to the claimed subject matter.

It is clear that the cited references establish that persons of ordinary skill in the art would have used predefined programs to perform simulations of business games, with nothing in the cited references to provide any hint that a person of ordinary skill in the art would have been led to translate player definitions as defined in claim 1 into at least one codified script that is executed.

As explained in the Background section of the present application, a “disadvantage” of conventional systems is “their limited adaptive flexibility.” Specification, page 2, lines 20-21.

“If a process or policy rule is changed, substantial programming may be required to effect the appropriate change in software code.” *Id.*, page 2, lines 21-22. “Generally, the experimenter must choose the individual software package that most closely matches the business processes. Significant policy changes may otherwise require a change of experimental economic simulation software packages.” *Id.*, page 2, line 24-page 3, line 4. In contrast, by using the ability of translating player definitions into at least one codified script, as performed by claim 1, enhanced flexibility is provided, which is clearly not hinted anywhere in the cited references.

The cited references would have led a person of ordinary skill in the art to use **predefined** programs to perform simulations, rather than use a codified script translated from player definitions. Thus, it is also clear that a person of ordinary skill in the art would not have been prompted to combine the teachings of the references to achieve the claimed invention.

In view of the foregoing, it is respectfully submitted that the obviousness rejection of claim 1 and its dependent claims over the cited references is erroneous.

Reversal of the final rejection of the above claims is respectfully requested.

2. Claims 10-17.

Independent claim 10 recites an apparatus for determining an economic impact of business policies comprising:

- a business process definition module for providing player definitions defining a plurality of players and an associated set of rules defining a possible decision space, a decision-making process tree, an information set, an outcome function, and a payoff function for each player;
- a script translator module for translating the player definitions into codified scripts, wherein the codified scripts define at least one simulation stage; and
- a simulation module for executing the codified scripts, wherein a result of the outcome and payoff functions at the end of execution of the at least one simulation stage determines the economic impact of the business policies.

Independent claim 10 is non-obvious over the cited references for reasons similar to those discussed for claim 1. Specifically, the cited references do not provide any teaching or hint of a script translator module for translating the player definitions into codified scripts, where the codified scripts define at least one simulation stage, and a simulation module for executing the codified scripts, where a result of the outcome and payoff functions at the end of execution of the at least one simulation stage determines the economic impact of the business policies.

Therefore, the obviousness rejection of claim 10 and its dependent claims is in error.

Reversal of the final rejection of the above claims is respectfully requested.

3. Claims 18-23.

Independent claim 18 recites a computer implemented method of predicting a behavioral outcome resulting from a business rule, comprising the computer executing the steps of:

- defining at least one player, business rules, and an environment that defines actions that the player can take in accordance with the business rules;
- translating the definitions into a codified script; and
- determining a behavioral outcome resulting from player-selected actions during execution of the codified script.

With respect to claim 18, for reasons similar to those stated above with respect to claim 1, the hypothetical combination of the cited references do not disclose or hint at translating the definitions into a codified script, and determining a behavioral outcome resulting from player-selected actions during execution of the codified script.

Therefore, the obviousness rejection of claim 18 and its dependent claims is in error.

Reversal of the final rejection of the above claims is respectfully requested.

CONCLUSION

In view of the foregoing, reversal of all final rejections and allowance of all pending claims is respectfully requested.

Respectfully submitted,



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VIII. APPENDIX OF APPEALED CLAIMS

The claims on appeal are:

- 1 1. A computer-implemented method of determining an economic impact of business
2 policies, comprising the computer executing the steps of:
 - 3 a) providing player definitions defining a plurality of players and an associated set of
4 rules defining a possible decision space, a decision-making process tree, an information set, an
5 outcome function, and a payoff function for each player;
 - 6 b) translating the player definitions into at least one codified script; and
 - 7 c) executing the at least one codified script, wherein a result of the outcome and
8 payoff functions at the end of execution of a script stage determines the economic impact of the
9 business policies defined by the rules.
- 1 2. The method of claim 1 wherein the players are exclusively human.
- 1 3. The method of claim 1 wherein the players comprise a combination of human and
2 automated players.
- 1 4. The method of claim 1 further comprising the steps of:
 - 2 d) modifying the associated set of rules for one or more players; and
 - 3 e) repeating steps b)-c) according to the modified set of rules.
- 1 5. The method of claim 1 further comprising the step of:
 - 2 d) providing calibration data for the defined players based on empirical sales
3 information, wherein the at least one script is generated in accordance with the player definitions
4 and the calibration data.

1 6. The method of claim 1 further comprising the steps of:
2 d) providing a plurality of scenarios defining variations on the set of rules associated
3 with one or more players, wherein step c) further comprises the step of generating scripts
4 corresponding to the player definition variations.

1 7. The method of claim 1 wherein the at least one script is compiled on the fly during
2 execution.

1 8. The method of claim 1 wherein the at least one script is compiled in its entirety before
2 execution.

1 9. The method of claim 1 wherein the set of rules associated with at least one player defines
2 at least one business policy from the group comprising: advertising policy, sales policy, returns
3 policy, rebate policy, minimum advertised price policy.

1 10. An apparatus for determining an economic impact of business policies, comprising:
2 a) a business process definition module for providing player definitions defining a
3 plurality of players and an associated set of rules defining a possible decision space, a decision-
4 making process tree, an information set, an outcome function, and a payoff function for each
5 player;
6 b) a script translator module for translating the player definitions into codified
7 scripts, wherein the codified scripts define at least one simulation stage; and
8 c) a simulation module for executing the codified scripts, wherein a result of the
9 outcome and payoff functions at the end of execution of the at least one simulation stage
10 determines the economic impact of the business policies.

1 11. The apparatus of claim 10 wherein the players are exclusively human.

1 12. The apparatus of claim 10 wherein the players comprise a combination of human and
2 automated players.

- 1 13. The apparatus of claim 10 further comprising:
 - 2 d) a calibration module providing calibration data for the defined players based on
 - 3 historical information, wherein the scripts are generated in accordance with the player definitions
 - 4 and the calibration data.

- 1 14. The apparatus of claim 10 further comprising:
 - 2 d) a scenario database providing a plurality of scenarios defining variations on the
 - 3 set of rules associated with one or more players, wherein the script translator module generates
 - 4 scripts corresponding to the player definition variations.

- 1 15. The apparatus of claim 10 wherein the scripts are compiled on the fly during execution.

- 1 16. The apparatus of claim 10 wherein the scripts are compiled in their entirety before
- 2 execution.

- 1 17. The apparatus of claim 10 wherein the set of rules associated with at least one player
- 2 defines at least one business policy from the group comprising: advertising policy, sales policy,
- 3 returns policy, rebate policy, and minimum advertised price policy.

- 1 18. A computer-implemented method of predicting a behavioral outcome resulting from a
- 2 business rule, comprising the computer executing the steps of:
 - 3 a) defining at least one player, business rules, and an environment that defines
 - 4 actions that the player can take in accordance with the business rules;
 - 5 b) translating the definitions into a codified script; and
 - 6 c) determining a behavioral outcome resulting from player-selected actions during
 - 7 execution of the codified script.

- 1 19. The method of claim 18 wherein the behavioral outcome includes an economic state of
- 2 each player.

- 1 20. The method of claim 18 further comprising the step of:
2 d) executing variations of the codified script.
- 1 21. The method of claim 18, further comprising:
2 receiving historical data and producing calibration data based on the historical data,
3 wherein the codified script is translated from the definitions and the calibration data.
- 1 22. The apparatus of claim 10, wherein in response to modification of the set of rules for one
2 or more players, the script translator re-translates the player definitions into modified scripts, and
3 the simulation module is for executing the modified scripts.
- 1 23. The method of claim 18, further comprising:
2 modifying the definitions;
3 translating the modified definitions into a modified script; and
4 determining another behavioral outcome resulting from player-selected actions during
5 execution of the modified script.

IX. EVIDENCE APPENDIX

None.

X. RELATED PROCEEDINGS APPENDIX

None.